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STEP

AUTHORS: Zharovskiy, F. G., Shpak, E. A., Piskunova, E. V.

TITLE: Extractive and photometric determination of titanium by means of N-benzoylphenylhydroxylamine

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, v. 28, no. 9, 1962, 1104 - 1106

TEXT: A photometric determination of titanium in the presence of zirconium is described. The method is based on the formation of a complex with N-benzoylphenylhydroxylamine (belfidron) and extraction of the complex with chloroform. The complex of titanium with N-benzoylphenylhydroxylamine obtained at pH = 1 has a molar ratio of the components of 1 : 2 (i.e. apparently $TiO(C_{13}H_{10}O_2N)_2$) and, extracted with chloroform from a 2 N HCl solution, a ratio of 1 : 4 corresponding to the formula $Ti(C_{13}H_{10}O_2N)_4$. Absorption spectra of the reagent and of the titanium or zirconium complexes were investigated and the molar extinction coefficient of the titanium complex determined with $\lambda_{355} = 5,200$. Qualitative experiments showed that chloroform solutions of corresponding complexes of aluminum, tin, antimony, tantalum, and tungsten reveal no absorption of light in the

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Extractive and photometric determination of...

visible spectrum, thus they do not disturb this colorimetric titanium determination. The maximum of absorption of the zirconium complex lies in the ultraviolet range. The colour of the extracted titanium complex in chloroform is stable for at least 5 hours. The following procedure is suggested: 100 ml of the solution to be analyzed (2 N corresponding to HCl or H_2SO_4), containing 0.12 - 1.0 mg titanium is mixed with 2 ml 5% alcoholic solution of N-benzoylphenylhydroxylamine in a separating funnel. Subsequently 10 ml chloroform are added, shaken for 0.5 minute, and the extraction repeated with 1 ml of fresh reagent and chloroform (5 ml) until the extract is colourless. The collected extracts are filtered into a calibrated flask (25 ml), filled to the mark with chloroform, and measured with a blue light filter in a colorimeter. The titanium content is determined by means of a calibration curve. There are 4 figures and 1 table.

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